AMENDMENTS TO THE CLAIMS

1. (Withdrawn) A compound semiconductor obtained by forming on a GaAs substrate a layer of InP crystal or a compound semiconductor crystal whose lattice constant is closer to that of InP than that of GaAs, which compound semiconductor is characterized in that:

the crystal is formed on the GaAs substrate via an InGaP buffer layer or an InGaAsP buffer layer; and

the thickness of the buffer layer is not less than 5 nm and not greater than 500 nm.

2. (Withdrawn) A compound semiconductor obtained by forming on a GaAs substrate a layer of InP crystal or a compound semiconductor crystal whose lattice constant is closer to that of InP than that of GaAs, which compound semiconductor is characterized in that:

an InGaP buffer layer or an InGaAsP buffer layer is formed on the GaAs substrate and an InP buffer layer is further formed on the InGaP buffer layer or InGaAsP buffer layer;

the crystal is formed via the two buffer layers;

and the total thickness of the two buffer layers is not less than 5 nm and not greater than 500 nm.

3. (Withdrawn) The compound semiconductor as claimed in claim 2, wherein the total thickness of the two buffer layers is not less than 25 nm and not greater than 500 nm.

4. (Withdrawn) The compound semiconductor as claimed in claim 2 or 3, wherein the thickness of the InP buffer layer is in the range of not less than 20 nm and not greater than 200 nm.

5. (Withdrawn) The compound semiconductor as claimed claim 1, wherein the compound semiconductor crystal whose lattice constant is closer to that of InP than that of GaAs is InGaAs or InAlAs crystal.

6. (Withdrawn) The compound semiconductor as claimed in claim 1, wherein the In content of at least the upper 5 nm of the InGaP buffer layer or InGaAsP buffer layer is higher than the content that lattice-matches with GaAs.

7. (Withdrawn) A compound semiconductor device comprising the compound semiconductor of claim 1.

8. (Original) A method of producing a compound semiconductor by growing on a GaAs substrate InP crystal or a compound semiconductor crystal whose lattice constant is closer to that of InP than that of GaAs, which method of producing a compound semiconductor is characterized in that:

an InGaP buffer layer or InGaAsP buffer layer is grown on a GaAs substrate; and

an InP crystal or a compound semiconductor crystal whose lattice constant is closer to that of InP than that of GaAs is grown on the InGaP buffer layer or InGaAsP buffer layer.

9. (Original) The method of producing a compound semiconductor as claimed in claim 8, wherein growth of the InGaP buffer layer or InGaAsP buffer layer is conducted at a temperature of not lower than 400 °C and not higher than 600 °C to a thickness of not less than 5 nm and not greater than 500 nm and growth of the InP crystal or a compound semiconductor crystal whose lattice constant is closer to that of InP than that of GaAs is conducted at a temperature of not lower than 400 °C and not higher than 700 °C.

10. (Original) The method of producing a compound semiconductor as claimed in claim 8, wherein an InP buffer layer is grown on the InGaP buffer layer or InGaAsP buffer layer, the InP buffer layer is raised in temperature to a prescribed annealing temperature and annealed, and the temperature is lowered to a prescribed crystal growth temperature for growing the InP crystal or compound semiconductor crystal whose lattice constant is closer to that of InP than that of GaAs, whereafter the InP crystal or compound semiconductor crystal is grown.

11. (Original) The method of producing a compound semiconductor as claimed in claim 10, wherein growth of the InGaP buffer layer or InGaAsP buffer layer is conducted at a temperature of not lower than 400 °C and not higher than 600 °C to a thickness of not less than 5 nm and not greater than 300 nm.

12. (Original) The method of producing a compound semiconductor as claimed in claim 10 or 11, characterized in that the thickness of the InP buffer layer is not less than 20 nm and not greater than 200 nm.

13. (Previously presented) The method of producing a compound semiconductor as claimed in claim 10, characterized in that the growth temperature of the InP buffer layer is not lower than 400°C and not higher than 550 °C.

14. (Previously presented) The method of producing a compound semiconductor as claimed in claim 10, wherein the InP buffer layer is raised in temperature to a prescribed annealing temperature and annealed, and then, before growing the InP crystal or compound semiconductor crystal whose lattice constant is closer to that of InP than that of GaAs, an operation for lowering the temperature from the prescribed annealing temperature to a prescribed crystal growth temperature and again raising it to the prescribed annealing temperature is repeated not less than one time and not more than five times, whereafter the temperature is lowered to the prescribed crystal growth temperature.

15. (Previously presented) The method of producing a compound semiconductor as claimed in claim 10, wherein the prescribed annealing temperature is not lower than 650 °C and not higher than 730 °C.

16. (Previously presented) The method of producing a compound semiconductor as claimed in claim 10, wherein the prescribed crystal growth temperature is not lower than 400 °C and not higher than 700 °C.

17. (Previously presented) The method of producing a compound semiconductor as claimed in claim 8, wherein the compound semiconductor crystal whose lattice constant is closer to that of InP than that of GaAs is InGaAs or InAlAs crystal.

18. **(New)** A method of producing a compound semiconductor, which comprises forming on a GaAs substrate a layer of InP crystal or a compound semiconductor crystal whose lattice constant is closer to that of InP than that of GaAs, wherein the crystal is formed on the GaAs substrate via an InGaP buffer layer or an InGaAsP buffer layer having a thickness of not less than 5 nm and not greater than 500 nm.